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XIII. *An Historical Register of the Aurora Borealis, from August the 8th, 1781, to August 19, 1783. By CALEB GANNETT, A. M. Rec. Sec. A. A.*

Aug. 8, **A**N Aurora Borealis appeared in a common form, 1781. from eight o'clock till after ten. A luminous arc extended horizontally from north-west to north-east. The height of the arc, about 25° . A thick dusky vapour lay below. A few small strice ascended from the body of light. At $10^{\text{h}} 15'$, a column of light ascended from about north-north-west,—passed north of *Arcturus*, and crossing the meridian in the zenith, extended to the east, to about 30° of the horizon. Thus it remained for several minutes, and then moved slowly southward, till $10^{\text{h}} 45'$, when it vanished.

Meteors appeared in great numbers, shooting, in general, from north-west to south-east.

22. An Aurora Borealis,—of little extent, and faint.

23. ditto, ditto.

Sept. 18. ditto, ditto.

19. Appeared an auroral segment, extending from north-north-west, nearly east, supported by a dark vapour. A second luminous segment soon appeared above the first,—a thick dusky vapour intervening between the two. Some strice proceeded from the uppermost segment, which appeared to curve directly towards the zenith. About ten o'clock, a column of light shot up from the east, and crossing the meridian north of the zenith, passed some degrees west of the meridian. At eleven o'clock, appeared a number of corruscations; after which, the whole declined, till an entire disappearance.

Sept.

Sept. 25. At 7^h 30', an auroral arc appeared. Its meridional height about 53°. At 7^h 45', striæ proceeded from the arc towards the zenith—their colour, in general, white.—Those striæ, from being regular, soon appeared like broken sheets of light. At 8^h 10', the various interrupted striæ, rising from west-south-west to east-south-east, concentrated at about 10° south of the zenith. Glades, diverging from that point, extended to 15° in length, in every direction. After remaining in this state about seven minutes, the northward radii recoiled towards the centre. The whole phenomenon, from that time, decreased rapidly. At 8^h 20', nothing more than a common Aurora was visible. The striæ from west-north-west were very red, and attended with corruscations. At 8^h 26', the height of the luminous arc not more than 40°. Two or three small striæ; also, very thin white corruscations observable, whose horizontal extent was from west to north, and vertical to 10° south of the zenith. At 8^h 30', corruscations ceased, and the light in the north scarcely so much as to attract notice. At 8^h 37', the light increased.—Striæ began to ascend from the east, very red.—The general arc appeared to generate new arcs, which travelled southward, till the uttermost reached the zenith at 8^h 43'. Between the arcs, which were not quite regular, proper sky appeared,—in some parts, 5° in width, in others 3°. At 8^h 46', regular striæ ascended from north-west to east, to 5° south of the zenith, and terminated in a segment of a circle, whose diameter was about 9°. A quantity of the vapour, in appearance like a small, thin, white, irregular cloud, collected at about 6° south of the fore-mentioned segment. At 8^h 54', the striæ continued;—the segment, in which they terminate, enlarged.—From nine o'clock, a gradual decrease, till the whole disappeared. Oct.

Oct. 15. At 8^h 16', a luminous arc commenced in a point within two or three degrees of the horizon, nearly east.—Thence diverging, it passed about 8° south of *Pleiades*, and proceeding between the stars in *Andromeda's Shoulder* and those in his left arm, crossed the meridian at about 13° south of the zenith, and extended to about 20° west of the meridian. At 5° altitude, the light was vivid and strong. From that height the light became more faint, till it became imperceptible at the afore-mentioned distance west of the meridian. The whole advanced south slowly, and disappeared at 8^h 33', Auroral light was visible also from north-west to north.

19. A small Aurora.

Nov. 13. Ditto.

14. Ditto.

15. Ditto.

19. An Aurora extended from north-west to north-east.—White, except a red spot in the north-east :—and in the north-west, red and yellow. Striæ,—numerous, but not long.

March 9, 1782. A small Aurora.

April 2. Ditto.

4. Ditto.

14. Ditto.

May 9. Ditto.

22. From an extensive Auroral arc, striæ proceeded, till they almost reached the zenith. Their motion, at first, regular, afterwards, flashing and quivering.

July 9. A small Aurora.

10. Ditto.

Aug. 26. An Aurora. Striæ,—white but not long.

Sept. 13. An Aurora continued through the night. Its horizontal extent, from west-south-west to north-east. Its complexion, white and vivid. Some striæ, though not numerous. In the west, the dusky vapour, near the horizon, appeared in two segments of a circle; one extending southward, the other northward.

14. An Aurora afforded a few striæ. One striæ, generated from the southern limit of the horizontal light, ascended almost to the zenith. It diverged very much in its ascent. After continuing at its greatest height for a minute or two, it subsided to about 50° altitude. At $10^{\text{h}} 30'$, the lower part, at about 15° altitude, became detached from the light below, and in the form of a narrow glade, remained suspended for several minutes, and then vanished.

22. At ten o'clock, a yellow stria of Auroral light appeared single in the west-south-west, without any dusky vapour beneath it; but rising from about 20° above the horizon, out of a smoky haze, and ascending to 55° altitude. It continued bright a few minutes, and then became faint. Three small striæ, at a small distance west of the former. After a continuance of about a quarter of an hour, the whole disappeared.

29. A small Aurora.

30. An Aurora—Inconsiderable through the evening. At twelve o'clock, striæ were numerous, frequent, and their motion brisk and undulatory.

Oct. 2. A small Aurora.

9. Ditto.

10. Ditto.

26. Ditto.

Jan. 26, 1783. Ditto.

Feb.

Feb. 2. A small Aurora.

21. Ditto.

27. Ditto. A few white striæ.

March 2. Ditto.

9. Ditto.

27. Ditto.

29. An Aurora was visible at the horizon, extending from north-west to nearly north-east. The whole arc, included within those limits to about 12° altitude, quite luminous. At $7^{\text{h}} 20'$, the usual dusky appearance commenced at the horizon, and increased till it became about 15° altitude. Light proceeded from the upper part, not as from the periphery of a regular arc, but from different heights. Striæ, frequent and disconnected, often appearing like rare white luminous clouds, varying their position and continually rising, till $7^{\text{h}} 50'$ they reached the zenith. Striæ more prevalent, passing the zenith. At 8^{h} , appeared, a detached bright Auroral cloud in the south-east, within about 30° of the horizon.—Another long similar cloud in the south-west, passing swiftly downward to the same distance from the horizon;—thence, with a quick motion, westward;—then vibrated from east to west in an arc of several degrees. Each Auroral cloud frequently disappeared in an instant, then revived with equal, or superior, lustre.—Thus they continued a few minutes, and then entirely vanished. The striæ, which were hitherto frequent and brisk, tho' irregular, appeared to collect at about 5° south of the zenith, and there formed a large body of light.—Soon succeeded new shootings of striæ,—strong and regular; and below them, a frequent flashing of light. Between the striæ and luminous glades was the same dusky appearance, as in the cloud near the horizon. At $8^{\text{h}} 15'$, a corona formed at about 3°

south of the zenith, surrounding a small unilluminated circle. Dilated striæ proceeded from it in every direction. The corona soon changed its form, and became two segments of a circle, convex towards the centre of the corona. Radii proceeded nearly north and south, diverging. These presently ceased. At 8^h 25', faint glades of light remained near the zenith, entirely detached from a large body of light extending from west-north-west to nearly east.—These in a tremulous motion, and frequently shooting very nimbly with increased lustre. At 8^h 40', light shooting briskly from east-north-east in their glades, a little south of the zenith, to about 18° west. Several apparently compact spots of light near the zenith, below which, corruscations were very brisk. Calm till 8^h 45'.—Wind then fresh from west. At 9^h 30', the Aurora, for three quarters of an hour past, having been upon the decline, settling down into a general body of light of a dull appearance, without a very dusky cloud near the horizon,—now re-commenced in vivid striæ from the top of a black arc, about 25° altitude. At 9^h 35', the striæ, from shooting very nimbly, became corruscations,—passed considerably south of the zenith, and continued several minutes in very quick vibrations. At 9^h 50', no uniform dusky appearance near the horizon,—the light appearing in detached clouds from thence upwards, dancing and flashing to the zenith. At 10^h 15', subsided into a general body of light.

March 30. A small Aurora.

April 3. Appeared a number of Auroral spots. After a short continuance, they vanished. No other Auroral light visible.

7. In the beginning of the evening, appeared a common white Aurora, forming an agreeable arc at about 20° altitude, extending

extending from north-west to north-east, supported by a thick dusky cloud, as usual ; through which several stars were plainly visible, especially one very near the horizon. At eight o'clock, striæ began to shoot. From $8^h\ 15'$ to $8^h\ 30'$, the light shot into different forms, detached in large spots or clouds. At $8^h\ 30'$, a column of light arose from west-north-west ; and, passing about 15° north of *Procyon*, extended several degrees east of the meridian. At the same time, another column ascended from nearly east, at a considerable distance from the horizon,—passing a few degrees south of the other, and terminating a little west of the meridian. Those parts of the heavens included between the Auroral clouds, had a similar appearance with the dusky cloud, which usually appears beneath an Auroral arc. Stars were very visible in those included parts. The two columns from east and west, moved slowly south a few minutes, and then disappeared. Afterwards, the light decreased till nine o'clock, when it became an ordinary Aurora.

April 11. A small Aurora.

27. Ditto.

May 13. An Aurora commenced in the beginning of the evening ;—ascended in striæ ;—afterwards changed into whitish clouds, very thin, and in detachments passed the zenith,—travelled southward, and continued visible within 20° of the horizon. It soon declined, and in a little time was reduced to a common Aurora.

29. A small Aurora.

Aug. 1. Ditto.

16. Ditto.

19. Ditto.

